BANDPASS PREDISTORTION METHOD AND APPARATUS FOR DIGITAL RADIO TRANSMISSION

ABSTRACT OF THE DISCLOSURE

An apparatus and method for generating an envelope predistorted radio frequency signal which avoids undesirable spurious emissions. A complex baseband signal, having an in-phase component I and a quadrature component Q, is sampled and filtered in a sampling circuit and filter circuit to obtain samples I_k of the in-phase component and samples Q_k, the quadrature component. The magnitude x_k of each sample pair is determined in a first calculation circuit. An amplitude and phase distortion factor D_k, based on scaled values of the archyperbolic tangent and the hyperbolic tangent of the baseband sample magnitude is determined in further calculation circuit and a multiplier. Each sample I_k of the in-phase component and Q_k of the quadrature component is multiplied by the corresponding distortion factor D_k, and the resulting predistorted components combined and upconverted to provide a predistorted baseband signal which is amplified in a power amplifier having hyperbolic tangent distortion.